

ZOOLOGY.—*North American harpacticoid copepods: 3*, *Paracamptus reductus*, n. sp., from Alaska. MILDRED STRATTON WILSON, Arctic Health Research Center, U. S. Public Health Service, Anchorage, Alaska.

(Received July 30, 1956)

The genus *Paracamptus* is among the few genera of fresh-water Canthocamptidae occurring in Europe and Asia that has not been reported from North America. It is of interest therefore to record its occurrence on this continent, as represented by a new species found in Alaskan collections. The harpacticoid copepods listed as occurring with the new *Paracamptus* also represent new records for North America. Reference has been made (M. S. Wilson, 1956) to their discovery in Alaska, but these are the first locality records to be published. The genus *Maraenobiotus* is likewise a Eurasian genus of the Canthocamptidae not before known from North America.

I am indebted to O. A. Mathisen, Fisheries Research Institute, University of Washington, and to Kenneth Andress, Spenard, Alaska, for the collections containing this new species.

***Paracamptus reductus*, n. sp.**

Figs. 1-16

*Specimens examined*.—Type lot: 9 ♀ (2 ovigerous), 4 ♂. Margin of Lake Tikhik, Bristol Bay area of southwestern Alaska (about lat. 60°N., long. 159°W.); August 19, 1954; O. A. Mathisen. Occurring with *Moraria duthiei* T. and A. Scott and *Maraenobiotus insignipes* (Lilljeborg). Holotype ♀, U. S. National Museum no. 99416; allotype ♂, no. 99417.

1 ♀ (ovigerous). Margin of Paxson Lake, Richardson Highway, Alaska, (about lat. 63°N., long. 145°W.); June 28, 1951; K. Andress. Occurring with *Moraria duthiei* and *M. mrazeki* T. Scott.

*Diagnosis*.—Caudal rami of female, length more than twice width; shorter in male; both sexes with curved crest of spinules near base of inner dorsal side and longitudinal crest of spinules posterior to insertion of dorsal seta. Leg 1 with three setae on endopod segment 2, both apical setae much longer than endopod and modified like those of exopod. Endopods lacking

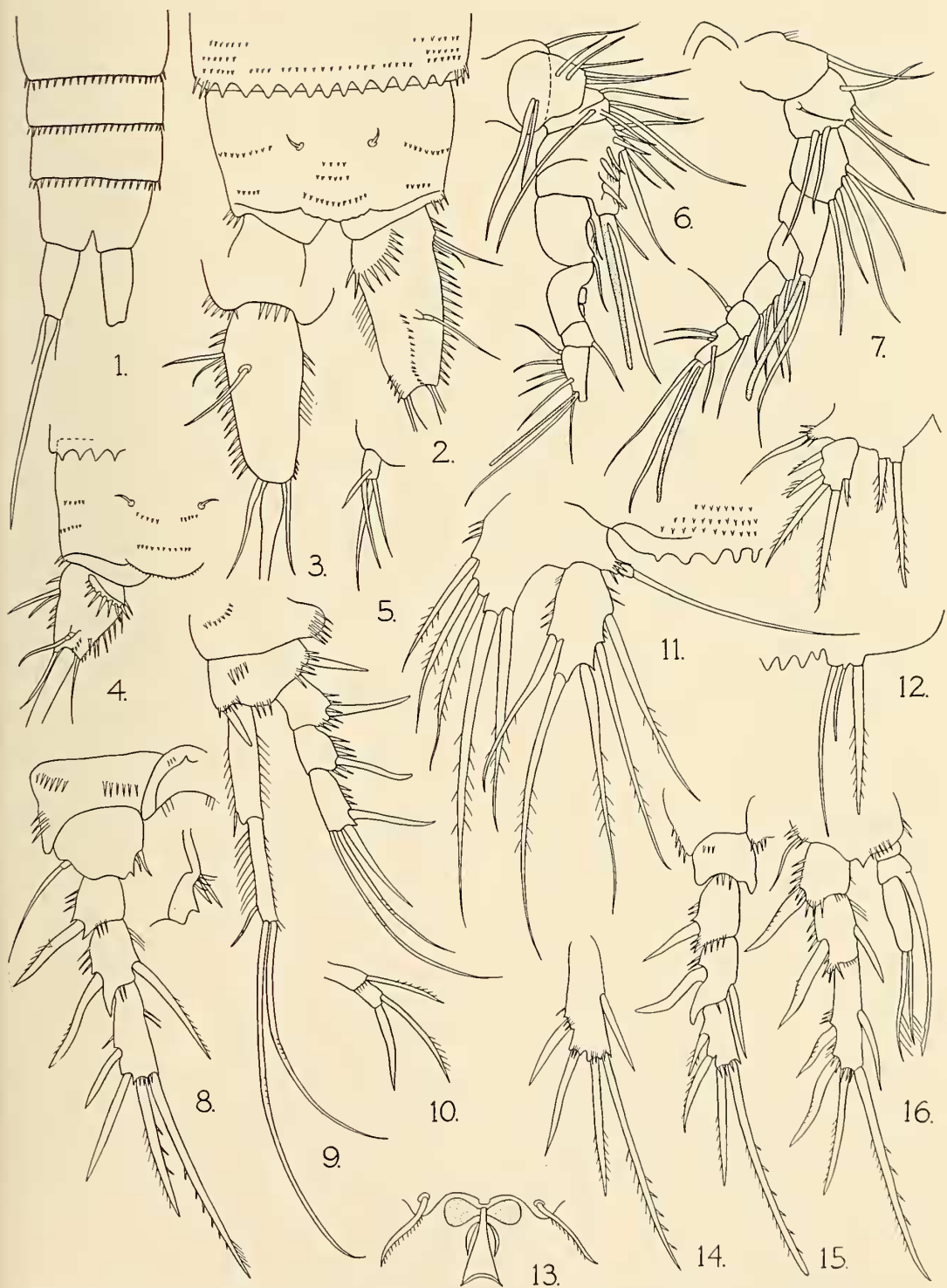
on legs 2-4 of female and on legs 2 and 4 of male; that of leg 3 normally developed in male, with two apical setae. Leg 5, segment 2 of both sexes, middle seta of similar stoutness and armature to other setae.

*Description*.—Length, dorsal midline, ♀ Tikhik Lake, 0.55-0.6 mm, Paxson Lake, 0.7 mm; ♂, 0.465-0.47 mm.

FEMALE: Posterior edge of all body segments, except the last, coarsely serrate on dorsal side (Fig. 2); surface covered by broken rows of minute spinules (partially indicated in Fig. 2). Ventrally, urosome segments not serrate but each with single unbroken row of spines (Fig. 1). Last segment with a few spines ventrally at bases of rami and a lateral group. Margin of anal operculum wavy or minutely spinulose.

Caudal ramus (Figs. 2, 3) constricted distally, length more than twice its greatest width (2.3-2.45 times); longer than outer margin of last body segment (about 1.4 times). Lateral setae placed as usual, the proximal on outer margin near base and accompanied by shorter seta; distal seta placed a little distad on ventral surface. Dorsal seta on a twice segmented base, placed just distad to middle of ramus. Entire outer margin including that above proximal seta, armed with row of slender spinules. Arc of somewhat larger, graduated spinules forming transverse crest on inner proximal portion of dorsal surface. Longitudinal row of very short spinules ranging from behind point of insertion of dorsal seta to apex of ramus. Inner margin with medial group of fine hairs and distal group of minute spinules. Caudal setae (Fig. 1) as usual for *Paracamptus*, outer and inner setae of subequal size, length less than that of ramus; middle seta well developed, base enlarged, unjointed; length less than that of urosome (equaling a little more than segments 4 and 5 plus ramus) and from 2.2 to 2.9 times length of ramus.

Antennule (Fig. 7) 8-segmented; without plumose setae; aesthete of segment 4 reaching to end of antennule; outer setae of two apical segments on segmented bases. Exopod of antenna (Fig. 10) 2-segmented; first segment with plumose



FIGS. 1-16.—*Paracampylus reductus*, n. sp.: 1, Female, urosome ventral; 2, female, detail distal segments of urosome and caudal ramus, dorsal; 3, female, caudal ramus, ventral; 4, male, detail distal segment of urosome and caudal ramus, dorsal; 5, female, mandible palp; 6, male, antennule; 7, female, antennule and rostrum; 8, female, leg 4, with detail inner distal edge of basipod 2; 9, female, leg 1; 10, female, exopod of antenna; 11, female, leg 5; 12, male, legs 5 and 6; 13, female, detail of genital area; 14, female, leg 2, exopod segment 3; 15, male, leg 4; 16, male, leg 3.

seta; second with subapical plumose seta and very stout, unornamented apical spine. Mandible palp (Fig. 5) 1-segmented, with one subapical and three apical setae.

Leg 1 (Fig. 9) with 3-segmented exopod and 2-segmented endopod; exopod shorter than endopod, reaching to about proximal third of apical endopod segment. Endopod segment 1 wider and a little longer than segment 2, with short inner seta. Segment 2 narrowed, with short inner seta distally and two long, curved apical setae of the modified type found on apical exopod segment; inner seta longer than outer and both longer than endopod; relative length of outer seta, inner seta and endopod, 22:30:17.

Legs 2-4 with 3-segmented exopods. Exopod segment 2 always with inner seta. Exopod segment 3 with two outer and two terminal spines of which the inner is the longer; inner spiniform seta on legs 2 and 3 (Fig. 14), absent on leg 4. Endopods lacking, though usually minute setae present in usual position of endopod (Fig. 8).

Leg 5 (Fig. 11). Distal segment 2, length about 2 times its width; all five setae similar to one another, sparsely plumose; seta 4 the longest, seta 5 the shortest; relative length of setae to one another (from outer edge), 19:21:22:25:16. Basal segment, outer portion of inner expansion bearing the first two setae produced beyond the rest of segment, reaching to about middle of segment 2; relative length of setae to one another, 19:27:15:13:10.

MALE: Habitus as in female. Caudal ramus (Fig. 4) differing from female in being shorter than outer margin of last body segment (about 14:20). Armature similar; spinal arc on proximal dorsal face accompanied by distinct ridgelike sclerotization. Dorsal seta placed at about distal third; distad to it a short, longitudinal row of 3-4 spines.

Antennule (Fig. 6) 8-segmented, third and fourth segments imperfectly separated into additional segments. Fourth segment dilated and bearing short, stout setae. Three segments beyond geniculation, apical segment shorter than two preceding segments, apex constricted and produced beyond insertion of terminal setae; proximal, lateral setae with segmented bases as in female.

Leg 1 as in female. Legs 2 and 4 lacking endopods (no minute setae found as in female). Leg 3 (Fig. 16) with 3-segmented endopod reaching to end of exopod 2; its basal segment without inner

seta; apophysis well developed, reaching to end of exopod, its total length greater than that of endopod; third segment with two subequal, apical setae also reaching to near end of exopod, their length subequal to that of endopod.

Leg 4 (Fig. 15), exopod with same setation as in female but somewhat modified. Outer distal corner of segment 2 more enlarged and outer spine much more recurved than in female. Exopod segment 3 reduced in size, its length subequal to that of exopod 2 rather than longer as in female.

Leg 5 (Fig. 12). Distal segment 2 small, length about 1.5 times the width, with five setae; four outer setae of different lengths but of similar stoutness, all plumose; innermost seta reduced, shorter than segment; relative length of setae to one another (from outer to inner), 5:7:11:16:4. Inner basal portions of leg not divided, with two spiniform setae borne on slight production of segment, inner seta subequal in length to longest (fourth) seta of segment 2, and a little more than twice length of outer (17:7). Leg 6 (Fig. 12) with three setae, the innermost stout and spiniform, subequal to slender outer seta; both outer and innermost setae a little longer than longest seta (second basal) of leg 5.

*Discussion.*—Only two species of *Paracamptus* are known: *P. schmeili* (Mrazek) from Europe and *P. baikalensis* Borutzky from Lake Baikal in Asia. Several varieties have been named for *schmeili* but Lang (1948), on the basis of the extreme variability found in specimens he studied from Sweden, considers that none can be recognized as subspecies.

*P. baikalensis*, known only from the female, is separable from *schmeili* on the basis of the much shorter caudal ramus (wider than long) and the lack of reduction and modification of the middle seta of the second segment of the fifth leg. The setae of the fifth leg of *schmeili* are reportedly variable, but according to Lang, the third or middle seta of the second segment is always finer than the others, nonplumose, usually shorter than the outer setae, and always shorter than the inner setae. This seta in the new Alaskan species *reductus* is not modified or reduced, being plumose and of similar stoutness to the other setae in both sexes. The occurrence of this character in a species so distinct as *reductus* gives strength to its importance as a specific differentiation between *baikalensis* and *schmeili*, a point which Lang questioned.



In comparing *reductus* with the other two known species, the most obvious difference is the lack of the endopods of legs 2-4, an unusual character in free-living copepods and not previously known in the Canthocamptidae. Such a lack has been recorded in the Harpacticoida for two other genera, *Paranannopus* (family Cleto-didae) and *Leptopsyllus* (family Paramesochridae). The endopods of these legs in *Paracamptus* are reduced in segmentation, size and armature, but the forms that have been described have shown no indication of intermediate conditions leading to the complete loss of the endopod. If one were dealing with only a single specimen, a single sex, or a collection from a single lake, it might be suspected that an anomalous condition exists. But all the specimens examined lack the endopods, and the species is known from two widely separated lakes of different drainage systems. Possibly the strongest reason for not regarding this condition as anomalous is the fact that the endopods are lacking not only in the female, but also on legs 2 and 4 of the male, although the modified copulatory endopod of the third leg is normally and strongly developed. Additional evidence that the complete loss of the endopod is normal for this species, is found in the second basal segment, which is likewise reduced. This is shown clearly in figure 8. The inner portion of the basal segment is slanted abruptly upwards just beyond the spinous point which is present between the exopod and endopod in all *Paracamptus*. That the minute setae present in the female may be regarded as remnants of the endopod is suggested by their position just

beyond this spinous point where the endopod would normally be attached.

Even if the endopods were normally developed, *P. reductus* has other characters which would separate it from *baikalensis* or from any of the forms of *schmeili*. The caudal ramus is shaped much like that of typical *schmeili*, but the armature apparently differs in part. In *reductus*, there is a basal crest of strong spines instead of hairs. The longitudinal row of spinules running from the base of the dorsal seta to the apex of the ramus in both sexes of *reductus* has not been shown in any figures of *schmeili*. The great length of the outer apical seta of the endopod of the first leg may be peculiar to *reductus*; the reduced inner seta present in *reductus* is usually absent in *schmeili*. The fifth legs of both sexes differ from *schmeili* in that the third seta of the second segment is similar to the other setae. The basal portion of this leg in the female of *reductus* differs from both *schmeili* and *baikalensis* in the prominent production of the outer portion bearing the first two setae. The endopod of leg 3 of the male has a single apical seta in *schmeili* and the presence of two apical setae in *reductus* appears to constitute a further distinction of the new species.

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